III. HABITAT AND SPECIES DESCRIPTIONS

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The Hallelujah Junction Wildlife Area can be grouped into 14 basic plant community types consisting of at least 180 plant species, including 32 non-native or naturalized species. The Wildlife Area provides suitable habitat for at least 236 species of fish, amphibians, reptiles, birds, and mammals. To date, 4 rare plants and 11 special-status animal species have been documented on or near the site.

1. Flora

Vegetation Communities, Habitat Types and Plant Species

METHODOLOGY

Habitat and plant species descriptions are based upon reconnaissance-level field surveys and plant community mapping conducted during 2007 and 2008 as well as a review of published and unpublished reports concerning the Hallelujah Junction Wildlife Area (HJWA) and the surrounding area. The objectives of the surveys included:

- Compiling an inventory of vascular plant species growing without cultivation in the area
- Characterizing the habitat types (plant communities) occurring in the area
- Locating and mapping special-status plant species occurring in the area
- Identifying and mapping sensitive habitats within the area

Literature Review. A focused review of literature and species databases was conducted prior to field surveys. Sources reviewed included California Natural Diversity Data Base (CNDDB) occurrence records for the Evans Canyon and Beckwourth Pass U.S. Geological Survey (USGS) 7.5' quadrangles and the five surrounding quadrangles in California (CDFG 2008a); county and USGS quadrangle occurrence records in the California Native Plant Society (CNPS) Inventory of Rare and Endangered Vascular Plants of California (Tibor 2001, CNPS 2008) for the same seven quadrangles; and regional floras (Munz and Keck 1973, Hickman 1993). A special-status plant survey conducted in 1992 of a small portion of the HJWA located within the 2007 Balls Canyon fire area was also reviewed (Witham 1992).

Field Survey and Plant Community Mapping. The initial botanical survey of HJWA was conducted on 29 July 2007 and was mostly confined to the riparian area along Long Valley Creek. The Balls Canyon fire, a result of a lighting storm on 11 July 2007, resulted in restricted access to most of the Wildlife Area. Additional botanical field surveys and plant community mapping were conducted between 14 and 20 May 2008 (areas burned in the 2007 Balls Canyon fire were mostly observed by vehicle while crossing through those areas). The timing of this survey was appropriate for identification of some but not all of the special-status plant species with potential to occur in the survey area.

The plant community mapping was based upon 1:12000 scale aerial photos of the wildlife area. The aerial images were taken in May 2007 (before the Balls Canyon fire), and georectified for field use. For the 2008 field season, the area of the stand-replacing Balls Canyon fire was excluded from the mapping effort (the fire boundary overlaid on aerial and ground-truthed). Botanists delineated most of the plant communities in the field, mapping the smallest recognizable area of each plant community directly onto the aerial photo. Ninety percent of the resulting polygons were ground-truthed. The plant community map was hand digitized from the marked-up aerials for the GIS database.

All vascular plant species encountered in identifiable condition were identified using keys and descriptions in Munz and Keck (1973) and Hickman (1993).[1] The generalized plant community

[1] Scientific nomenclature for plants in this LMP mostly follows Hickman (1993) and, for special-status species, Tibor (2001); and CNPS (2008). Common names follow Abrams (1923-1960); Hickman (1993); and the U.S. Department of Agriculture

classification schemes of Holland (1986), Sawyer and Keeler-Wolf (1995),[2] and CDFG (2003) were consulted in classifying the habitat types. The final classification and characterization of the habitat types were based on field observations.

Habitat types considered sensitive include those listed on the CNDDB working list of "high priority" habitats for inventory (i.e., those habitats that are rare or endangered within the borders of California) (Holland 1986, CDFG 2003). Sensitive habitats include riparian corridors, habitats for legally protected species, California Department of Fish and Game (CDFG) Species of Special Concern, areas of high biological diversity, areas providing important wildlife habitat, and unusual or regionally restricted habitat types.

FINDINGS

A total of 180 vascular plant taxa (species, subspecies and varieties) have been documented on the HJWA (Appendix D). Of these, 146 taxa are native and 32 are non-native. It is not known whether 2 taxa are native or non-native: common watercress (*Rorippa nasturtium-aquaticum*) and Kentucky bluegrass (*Poa pratensis*).

Overview of Plant Communities

Plant species on the HJWA can be grouped into 14 basic vegetation community types (Table III-a)[3]. Of these, nine can be considered late-successional native habitats of relatively wide distribution: *big sagebrush scrub*, *low sagebrush scrub*, *mountain mahogany scrub*, *juniper woodland*, *Jeffrey pine forest*, *Jeffrey pine woodland*, *riparian scrub*, *riparian forest/scrub*, and *meadow*. In contrast, the *spring* habitat type is a very localized native habitat. The *interior-rose golden-currant big-sagebrush scrub* is an unusual, localized habitat type dominated by native shrubs. *Recent burns* is an early-successional habitat type while another, *spineless-horsebrush/herbs*, appears to be an early-successional habitat type associated with relatively recent burns. The remaining habitat type, *developed*, is associated with human use and intensive, repeated disturbance.

Big sagebrush scrub, a highly variable habitat type, occupies the bulk of the Wildlife Area (Figure III-a). Low sagebrush scrub occurs only in the southern portion of the area, and mountain mahogany scrub, that may be widespread on mountain slopes in the general vicinity, is confined within the Wildlife Area to one area in the southwestern portion. Juniper woodland, Jeffrey pine forest, and Jeffrey pine woodland are habitats characterized by having a tree layer. Juniper woodland occurs only in the eastern portion of the area, east of U.S. 395, while Jeffrey pine forest and Jeffrey pine woodland are confined to the western portion of the area. Riparian scrub occupies narrow zones along drainages, especially those with perennial streams, while riparian forest/scrub is localized toward the southwestern end of the Wildlife Area along and near drainages. The meadow habitat type, also a highly variable habitat type, occupies large areas in the southeastern portion of the HJWA and less

(USDA) PLANTS database (2008), except for special-status species, which follow Tibor (2001) and CNPS (2008).

[2] Please cross reference with the 2009 2nd Edition when it becomes available.

[3] Bitterbrush stands at HJWA burned during the 2007 Balls Canyon Fire and therefore are not mapped or discussed as a distinct plant community. Restoration of this habitat type is a high priority to CDFG due to its value to wintering wildlife and is discussed with mountain mahogany scrub under Management Goals (IVB4).

extensive areas in the northwestern portion. Several burn areas mapped as recent burns occur in various portions of the Wildlife Area. The Balls Canyon fire area was not included in the above classification scheme as it will be an early successional stage habitat for the foreseeable future.

The spineless-horsebrush/herbs habitat type occurs only in the northwestern portion of the area, while the interior-rose golden-currant big-sagebrush scrub habitat type is restricted to one area in the extreme southeast. There are three mapped springs within the HJWA. The developed habitat type includes several small, developed areas in the southern portion of HJWA.

Table III-a. Crosswalk of Plant Community Types, Hallelujah Junction Wildlife Area

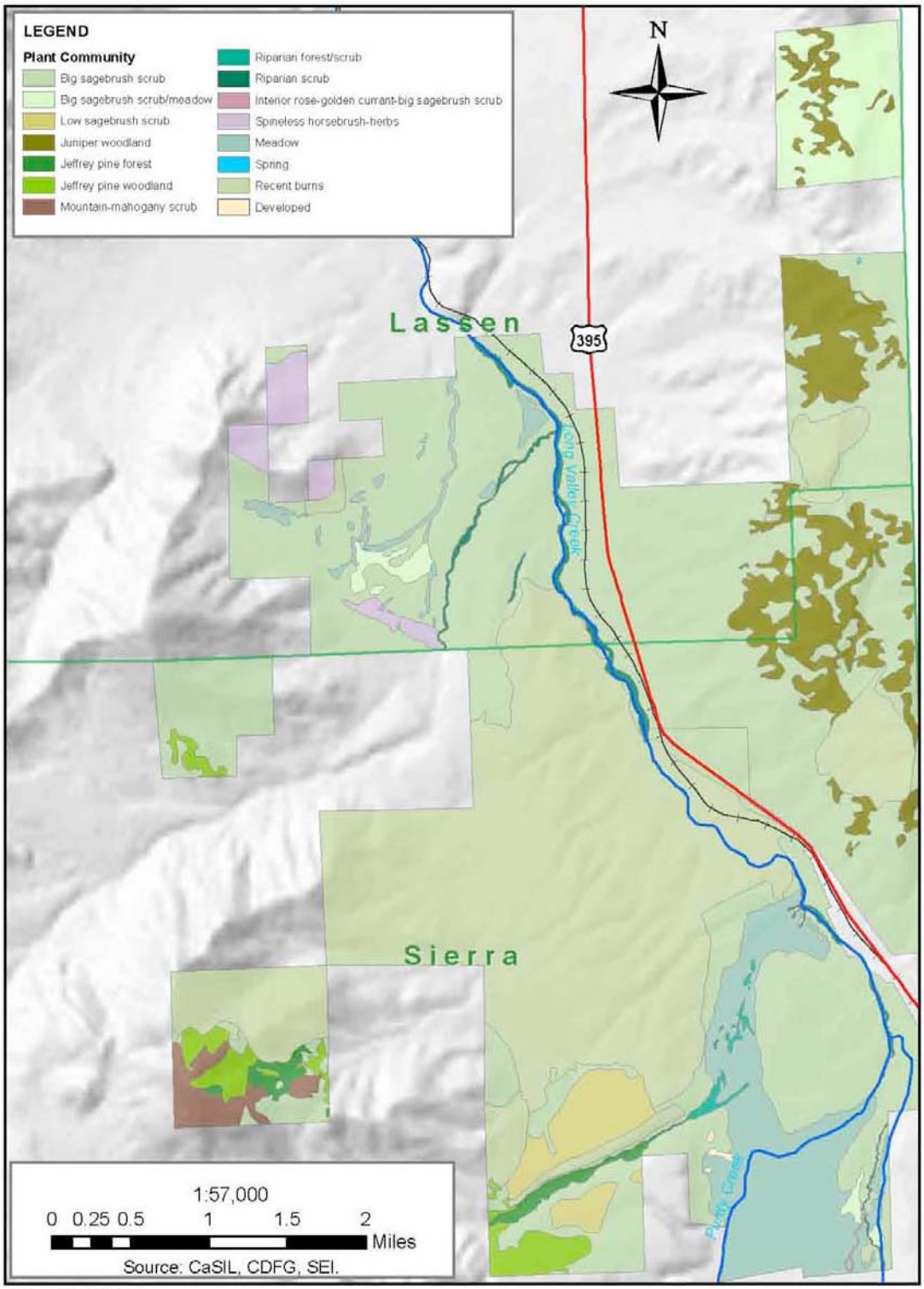
HJWA Plant Community Types	Total Acres	CDFG 2003, Holland Habitat Types [1]	Sawyer/Keeler-Wolfe Habitat Series [2]
Big sagebrush scrub	6598	Great Basin scrubs (35000) Great Basin mixed scrub (35100) Big sagebrush scrub (35210) Sagebrush steppe (35300)	Big sagebrush series
Low sagebrush scrub	263	Low sagebrush dwarf scrub (35.120.00)	Black sagebrush series Low sagebrush series
Mountain mahogany scrub[3]	125	Curlleaf mountain mahogany woodland and scrub (CDFG 2003) Broadleafed upland forest (81000)	Curlleaf mountain mahogany series
Interior-rose golden-currant big-sagebrush scrub	4	Great Basin mixed scrub (35100)	__
Spineless-horsebrush/herbs	175	__	__
Juniper woodland	861	Utah juniper woodland (CDFG 2003) Great Basin juniper woodland and scrub	Utah juniper series
Jeffrey pine forest	93	Jeffrey pine forest and woodland (CDFG 2003) Jeffrey pine forest (85100)	Jeffrey pine series
Jeffrey pine woodland	215	Jeffrey pine forest and woodland (CDFG 2003)	Jeffrey pine series
Riparian scrub	134	Low to high elevation riparian scrub (CDFG 2003) Pacific willow riparian forest (CDFG 2003) Montane riparian scrub (63500)	Montane wetland shrub habitat
Riparian forest/scrub	28	Montane black cottonwood riparian (61530), Modoc-Great Basin cottonwood-willow riparian forest (61610) Montane riparian scrub (63500) Modoc-Great Basin riparian scrub (63600)	Black cottonwood and mixed willow series
Meadow (dry to wet)	926	Montane meadow alliance (CDFG 2003) Great Basin Grassland (43000) Wet Montane Meadow (45110) Dry Montane meadow (45120)	Montane meadow habitat Nebraska sedge series
Spring	1	Meadows and seeps (CDFG 2003) Wet Montane Meadow (45110)	Montane meadow habitat Nebraska sedge series
Recent burns	3964	__	Cheatgrass series
Developed	7	__	__

[1] CDFG 2003, Holland 1986

[2] Sawyer and Keeler-Wolf 1995. Please cross reference with the 2009 2nd Edition when it becomes available.

[3] Bitterbrush stands within HJWA were burned during the 2007 Balls Canyon Fire and so were not mapped or identified as distinct plant communities.

Figure III-a. Plant Community Types, Hallelujah Junction Wildlife Area



Map: SEI 2008

Big sagebrush scrub. This habitat type corresponds to the big sagebrush series of Sawyer and Keeler-Wolf (1995) and correlates to the big sagebrush scrub alliance (CDFG 2003). This habitat type occupies the bulk of the HJWA. Other habitat types mostly occupy more limited areas within the matrix of big sagebrush scrub, and, particularly in the case of the tree-dominated habitat types (juniper woodland, Jeffrey pine forest, and Jeffrey pine woodland), are not always sharply distinct from big sagebrush scrub.

Big sagebrush scrub is defined broadly, and is exceedingly variable within the HJWA in physiognomy and species composition. Much of this variation is correlated with microenvironmental factors such as slope, aspect, moisture availability, and soil texture and composition. A number of subtypes could be recognized in the field but would require additional focused surveys to distinguish for mapping purposes.

The principal dominant shrub in this habitat type is big sagebrush (*Artemisia tridentata,* and may include ssp. *tridentata*, ssp. *vaseyana*, and ssp. *wyomingensis)*. Typically, while other shrub species are often present, they do not share dominance with big sagebrush. The most widespread associated shrub species (although absent from some areas) is bitterbrush or antelope bush (*Purshia tridentata*). Other associated shrubs, which are generally of localized occurrence, include green ephedra (*Ephedra viridis)*, yellow rabbitbrush (*Chrysothamnus viscidiflorus* ssp. *viscidiflorus*), spineless horsebrush (*Tetradymia canescens*), desert peach (*Prunus andersonii*), and desert gooseberry (*Ribes velutinum*). Although big sagebrush is generally dominant in this habitat type, bitterbrush or other shrub species may co-dominate locally. Some of these areas could correspond to the Great Basin mixed scrub habitat of Holland (1986); however, no areas were large enough, or distinct enough in their aerial photo signatures, to be mapped separately.

There is considerable variation in both the stature and the leaf size of big sagebrush in the big sagebrush scrub habitat type. Many areas of big sagebrush scrub are dominated by one type of big sagebrush. However, throughout the study area there is complete intergradation between different forms of big sagebrush (see low sagebrush scrub habitat type); it is unclear how much of this variation involves distinct races of big sagebrush and how much is purely environmentally induced.

As would be expected for such a widespread habitat type, a large number of grass and herb species are associated with big sagebrush scrub. Widespread and characteristic grass and herb species include such native species as Stansbury's phlox (*Phlox stansburyi*), silvery lupine (*Lupinus argenteus* var. *heteranthus*), one-sided bluegrass (*Poa secunda* ssp. *secunda*), squirreltail grass (*Elymus elymoides* ssp. *elymoides*), Thurber's needlegrass (*Achnatherum thurberianum*), long-leaved hawksbeard (*Crepis acuminata*), western hawksbeard (*Crepis occidentalis*), Columbia ragwort (*Senecio integerrimus* var. *exaltatus*), woolly mule-ears (*Wyethia mollis*), milk-vetch (*Astragalus* spp., several species), hog fennel (*Lomatium* spp.), five-leaf clover (*Trifolium andersonii* ssp. *andersonii*, generally gently sloping areas), large-headed clover (*Trifolium macrocephalum*, generally gently sloping areas), low everlasting (*Antennaria dimorpha*, generally gently sloping areas), arrow-leaved balsam-root (*Balsamorhiza sagittata*, mostly on slopes), basin wild rye (*Leymus cinereus*, generally gently sloping areas), a violet, probably Great Basin violet (*Viola beckwithii*), and panicled zigadenus (*Zigadenus paniculatus*). The non-native species cheatgrass (*Bromus tectorum*) and red-stemmed filaree (*Erodium cicutarium*) are also widespread and often locally abundant in the big sagebrush scrub in the HJWA.

Low sagebrush scrub. Depending on the dominant species of sagebrush, this habitat type could correspond to the low sagebrush dwarf scrub alliance (low sagebrush series) or to the black sagebrush dwarf scrub alliance (black sagebrush series) of Sawyer and Keeler-Wolf (1995) and CDFG (2003). Within the HJWA, this habitat type is apparently confined to two sizeable areas in the southern portion of the Wildlife Area west of U.S. 395. Other areas referable to this habitat type may occur in the Wildlife Area, within areas mapped as big sagebrush scrub. Low sagebrush scrub occurs in nearly level upland areas with relatively shallow, often rocky or gravelly soil.

Although this habitat type is not sharply distinct in species composition from big sagebrush scrub, it is quite distinct in physiognomy, and the boundary between low sagebrush scrub and big sagebrush scrub (often coinciding with a slope break, with big sagebrush scrub occupying more sloping areas) is often relatively abrupt. Low sagebrush scrub is characterized by dominance of sagebrush that is low-growing (mostly ≤ 1 feet [3 dm] tall, sometimes up to 1.6 feet [5 dm] tall) and with small leaves (mostly < 0.6 inches [1.5 cm] long). The dominant sagebrush species could include a low-growing form of big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*), low sagebrush (*Artemisia arbuscula*), or black sagebrush (*Artemisia nova*). (Positive identification of low-growing sagebrush species requires flower heads of these late summer to fall-flowering plants, which were not present during the survey). Throughout the study area, including areas of big sagebrush scrub, botanists observed apparent complete intergradation between tall and low-growing sagebrush, and between large-leaved and small-leaved sagebrush. Some upland areas with similar physiography to areas supporting low sagebrush scrub are occupied by scrub that, while relatively low, seems better treated as a phase of big sagebrush scrub, with more variation in shrub height and leaf size than in the areas mapped as low sagebrush scrub. Low sagebrush scrub is restricted to sagebrush scrub dominated almost entirely by low, small-leaved sagebrush.

Other shrub species are uncommon in the low sagebrush scrub of the study area. Bitterbrush is scattered in some areas, often toward the periphery of the low sagebrush scrub stands. Herb cover is generally moderately dense and diverse in species composition. Herb species that are especially associated with the low sagebrush scrub habitat type include Douglas' buckwheat (*Eriogonum douglasii* var. *douglasii*), cushion buckwheat (*Eriogonum ovalifolium* var. *ovalifolium*), alkali cusickiella (*Cusickiella douglasii*), California balsam-root (*Balsamorhiza macrolepis* var. *platylepis*), and scabland fleabane (*Erigeron bloomeri* var. *bloomeri*) (the latter two species occasionally occur in big sagebrush scrub). Other characteristic herbs in this habitat type include low everlasting, one-sided bluegrass, Stansbury's phlox, large-headed clover, and a violet, probably Great Basin violet.


Curlleaf mountain mahogany.
PRBO Conservation Science Shrubsteppe Monitoring Program

Mountain mahogany scrub. This habitat type corresponds to the curlleaf mountain mahogany series of Sawyer and Keeler-Wolf (1995) and to the curlleaf mountain mahogany woodland and scrub alliance of CDFG (2003). Specimens of the large shrub curlleaf mountain mahogany (*Cercocarpus ledifolius* var. *intercedens*) are widely scattered and infrequent in big sagebrush scrub, juniper woodland, and Jeffrey pine woodland throughout the HJWA. In one area of

the Wildlife Area, T21N R17E Sec. 16, the scrub habitat type is dominated by dense curlleaf mountain mahogany where it mostly occurs on ridgetops and steep upper slopes.

Interior-rose golden-currant big-sagebrush scrub. This habitat type designation is used only for an unusual scrub type occurring in a single area, near the southeast corner of the HJWA in T21N R18E Sec. 30. This area of scrub is long and narrow and generally follows a north-south drainage. Although it is dominated by native shrubs, this habitat type may have developed as a result of some past disturbance. The dominant shrubs are interior rose (*Rosa woodsii* var. *ultramontana*), golden currant (*Ribes aureum* var. *aureum*), and big sagebrush. Openings among the shrubs are vegetated with a variety of grass and herb species, including the native species silver wormwood (*Artemisia ludoviciana*) and the non-native species cheatgrass, white-top (*Cardaria pubescens*), broadleaved or perennial pepperweed (*Lepidium latifolium*), and common dandelion (*Taraxacum officinale*). Where the shrub cover becomes discontinuous, especially toward the south end of the mapped area, this habitat type intergrades with the adjacent meadow habitat.


Spineless horsebrush.
© 2008 Vernon Smith

Spineless-horsebrush / herbs. This is a distinctive, localized habitat type that is not adequately treated in generalized California vegetation classification schemes. This habitat type is mapped only in the northwestern portion of the HJWA. Some areas mapped as this habitat type have burned within the last decade or two, and it is possible that all areas of this habitat type are early successional areas following fire or other disturbance that removed the previous woody vegetation.

This habitat type is heterogeneous in species composition and physiognomy. It is generally characterized by scattered, small- to medium-sized shrubs at variable, low density, and a diverse assortment of native and non-native herbs and grasses. Shrubs are sometimes entirely absent from localized areas mapped with this habitat type. The most widespread shrub species in this habitat type is spineless horsebrush, although it is not universally present. Other characteristic shrubs include yellow rabbitbrush, Parry's rabbitbrush (*Chrysothamnus parryi*), and green ephedra. The thorny subshrub thorny skeleton plant (*Stephanomeria spinosa*) is scattered and occasionally locally abundant. Big sagebrush occurs sporadically, usually as small, young individuals. Bitterbrush occurs sporadically. Characteristic grass and herb species include squirreltail grass, Thurber's needlegrass, Stansbury's phlox, silvery lupine, woolly mule-ears, long-leaved hawksbeard, arrow-leaved balsam-root (especially on hill slopes), Columbia ragwort, woolly-pod milk-vetch (*Astragalus purshii* var. *tinctus*), and five-leaf clover. The non-native species cheatgrass and red-stemmed filaree are also abundant in this habitat type.

Juniper woodland. This habitat type corresponds to the Great Basin juniper woodland and scrub habitat type of Holland (1986), to the Utah juniper series of Sawyer and Keeler-Wolf (1995), and to the Utah juniper woodland of CDFG (2003). This habitat type occurs only in the portion of the HJWA located east of U.S. 395. It is best developed in the northeastern portion of the area, in T22N R18E, Sections 19, 30, and 31. Further south, except for localized areas, this habitat type becomes indistinct from big sagebrush scrub.

This habitat type is characterized by an arborescent layer consisting entirely of the small tree Utah juniper (*Juniperus osteosperma*). It is possible that western juniper (*Juniperus occidentalis* var. *occidentalis*) is intermixed in places; however, the only definite western juniper (with a prominent gland on each leaf) observed in the HJWA consisted of several scattered, heavily browsed (apparently by cattle) small trees in big sagebrush scrub in the northern portion of the area, west of U.S. 395. The density of juniper varies, but the trees are almost always well-spaced. To the south the trees are generally very widely spaced and the species composition of open areas between the junipers is similar to that of big sagebrush scrub. Big sagebrush is usually an abundant shrub associate in juniper woodland; other shrub associates include bitterbrush, green ephedra, yellow rabbitbrush, desert gooseberry, and gray ball sage (*Salvia dorrii* var. *dorrii*). Herb species composition and density vary from place to place; herb cover varies from sparse to moderately dense. Characteristic species include one-sided bluegrass, Stansbury's phlox, long-leaved hawksbeard, western hawksbeard, Thurber's needlegrass, thread-leaved locoweed (*Astragalus filipes*), shaggy milk-vetch (*Astragalus malacus*), arrow-leaved balsam-root, Columbia ragwort, Nevada lupine (*Lupinus nevadensis*, a special-status plant), and sickle-pod rock-cress (*Arabis sparsiflora* var. *sparsiflora*). The non-native species cheatgrass and red-stemmed filaree are also locally abundant in juniper woodland.

Jeffrey pine forest. This habitat type is recognized by Holland (1986), and corresponds to the Jeffrey pine series of Sawyer and Keeler-Wolf (1995) and the Jeffrey pine forest and woodland alliance of CDFG (2003). Although this habitat type is widespread in the eastern Sierra Nevada, it occurs only in limited areas in the western portion of the HJWA: bordering Balls Canyon Creek in T21N R17E Sec. 23, and in portions of T21N R17E Sec. 16. Much of the Jeffrey pine forest in Sec. 16 burned in the 2007 Balls Canyon fire, but some areas in this section were not burned.

This habitat type is characterized by dominance of Jeffrey pine (*Pinus jeffreyi*), which is generally the only tree species present. The tree canopy is relatively dense and closed or semi-closed in this habitat type, although openings do occur and the habitat type intergrades with the open-canopy Jeffrey pine woodland habitat type. Shrubs in the Jeffrey pine forest are most abundant in relatively open areas, and include big sagebrush, yellow rabbitbrush, and bitterbrush.

The herb layer is quite variable in both density and species composition, and is sometimes moderately dense. In the Jeffrey pine forest bordering Balls Canyon Creek, characteristic associated herb species include woolen-breeches (*Hydrophyllum capitatum* var. *alpinum*), Wheeler's bluegrass (*Poa wheeleri*), Columbia ragwort, Brown's pea (*Lathyrus brownii*), Nevada pea (*Lathyrus lanszwertii* var. *lanszwertii*), and short-beaked agoseris (*Agoseris glauca* var. *laciniata*). In one area of Jeffrey pine forest surveyed in T21N R17E Sec. 16, the understory had mostly burned in the Balls Canyon fire but the canopy was intact. The understory composition appeared similar, however, in bordering unburned areas. Characteristic herb species in this area include silvery lupine, woolly mule-ears, short-beaked agoseris, blue eyed Mary (*Collinsia parviflora*), low phacelia (*Phacelia humilis* var. *humilis*), long-leaved hawksbeard, western hawksbeard, one-sided bluegrass, Wheeler's bluegrass, and western peony (*Paeonia brownii*), along with the non-native species cheatgrass.

The streamside habitat within the Jeffrey pine forest along Balls Canyon Creek was not mapped as a distinct habitat. While having a Jeffrey pine overstory, this streamside supports occasional small stands of quaking aspen (*Populus tremuloides*) and widely scattered large shrubs characteristic of riparian scrub habitat (below) including Geyer willow (*Salix geyeriana*), arroyo willow (*Salix lasiolepis*), mountain alder (*Alnus incana* ssp. *tenuifolia*), and interior rose. Small floodplain terraces

adjacent to the stream channel and other moist areas near the creek support a distinctive assemblage of herbaceous species, many of them not in flower at the time of the survey, including Baltic rush (*Juncus balticus*), sedges (*Carex* spp.), clovers (*Trifolium* spp.), yarrow (*Achillea millefolium*), western buttercup (*Ranunculus occidentalis*), common horsetail (*Equisetum arvense*), hoary nettle (*Urtica dioic*a ssp. *holosericea*), and the non-native species common dandelion.

Jeffrey pine woodland. This habitat type is not specifically treated in generalized classification schemes, being intermediate between two major habitat types:Jeffrey pine forest and big sagebrush scrub. Within the HJWA, Jeffrey pine woodland occurs in a few areas in the southwestern portion. It is characterized by well-spaced Jeffrey pines that do not form a closed canopy. Most of the area occupied by this habitat is open, and has a shrub and herb composition similar to that of adjacent big sagebrush scrub. Shrub species such as big sagebrush, bitterbrush, and yellow rabbitbrush are abundant, along with herb species characteristic of big sagebrush scrub.

Riparian scrub. This habitat type does not entirely fit within generalized California vegetation classification schemes. It is best treated as a relatively low-elevation phase of the montane riparian scrub of Holland (1986). It roughly corresponds to the montane wetland shrub habitat (but not the series) of Sawyer and Keeler-Wolf (1995), which is also recognized by CDFG (2003). This habitat type occupies narrow zones, typically along the major drainages with permanent flowing streams. These include Long Valley Creek, Evans Canyon Creek, and Balls Canyon Creek.

Riparian scrub is dominated by large, sometimes sub-arborescent shrubs characteristic of sites where a permanent subsurface water supply is available. These include narrow-leaved willow (*Salix exigua*), Geyer willow, arroyo willow, Pacific willow (*Salix lucida* ssp. *lasiandra*), greenleaf willow (*Salix lucida* ssp. *caudata*), mountain alder, and interior rose. Shrub cover in this habitat type may be dense over sizable areas or sporadic and discontinuous. Jeffrey pines often occur as widely scattered, mostly small individuals. Along Balls Canyon Creek, there are occasional individuals of the large riparian tree black cottonwood (*Populus balsamifera* ssp. *trichocarpa*) in the riparian scrub.

A variety of herbs, many of them characteristic of wet or seasonally wet places, occur in this habitat type, mostly in open microhabitats between the shrubs. Characteristic native herbs include Baltic rush, western buttercup, clustered field sedge (*Carex praegracilis*), silver wormwood, smooth scouring-rush (*Equisetum laevigatum*), common horsetail, and field mint (*Mentha arvensis*). Kentucky bluegrass (*Poa pratensis*), which may be native or non-native, is also widespread. The non-native species black medick (*Medicago lupulina*) is also abundant and widespread in this habitat type. Cheatgrass is occasionally abundant in localized areas.

Riparian forest/scrub. This habitat type within the HJWA has affinities to both the montane black cottonwood riparian forest and Modoc-Great Basin cottonwood-willow riparian forest habitat types of Holland (1986), to the black cottonwood and mixed willow series of Sawyer and Keeler-Wolf (1995), and to the black cottonwood riparian forests and woodlands, Pacific willow riparian forests, and mixed willow riparian forests and woodlands alliances of CDFG (2003), as well as to riparian scrub types. Within the HJWA, this habitat type designation applies to a few riparian areas near the southern end of the area that contain large trees of characteristic riparian species at high enough density to warrant recognition as a separate habitat type.

Extensive closed-canopy riparian forests do not occur in the HJWA. The riparian forest/scrub habitats in the area are characterized by small clumps of trees interspersed with riparian scrub. This habitat

type is intermediate between riparian forest and riparian scrub. In the southernmost stand (T21N R17E Sec. 24), the dominant trees are black cottonwood and tree-sized greenleaf willow. There are also a few Jeffrey pines toward the margins of the stand. Open areas between clumps of trees are mostly occupied by riparian scrub vegetation, with patches of riparian shrubs and small areas dominated by herbaceous species typical of riparian scrub. In other stands of riparian forest/scrub further north, the principal tree species is often tree-sized Pacific willow.

Meadow (dry to wet). This habitat type does not entirely fit within generalized California vegetation classification schemes. Wetter meadow areas have affinities to the montane meadow habitat type of Holland (1986), equivalent to the montane meadow alliance of CDFG (2003), and the montane meadow habitat (not recognized as a series) of Sawyer and Keeler-Wolf (1995). Localized meadow areas may refer to the Nebraska sedge alliance (series) or to the sedge alliance (series) of Sawyer and Keeler-Wolf (1995) and CDFG (2003). This habitat type is widespread in the HJWA, although it only occurs west of U.S. 395. Meadows are best developed in relatively low-lying areas with well-developed soils that are moist to wet, at least seasonally. Meadows also occur, however, in more upland areas, sometimes areas of moderate slope, where they are interspersed with, and often intergrade with, big sagebrush scrub. Sometimes meadow habitat is confined to a narrow zone bordering a drainage, as along an unnamed drainage near the north end of the Wildlife Area, in T22N R17E, Sections 27 and 34. Extensive meadow areas occur in the southeastern portion of the area, in the extensive lowlands along Balls Canyon Creek and tributary drainages, and along drainages tributary to Long Valley Creek. Smaller meadow areas occur in the northern portion of the survey area.

The meadow habitat type is heterogeneous in species composition. A more detailed habitat classification would recognize several meadow types, based largely on moisture availability. For the purposes of the management plan, all meadow types are grouped as a single meadow habitat type because meadow types with different moisture regimes and dominant species intergrade extensively and often occur in a mosaic that is difficult to map based on aerial photo signatures.

Meadow habitats are characterized by dominance of grasses and herbs, with few woody species. Drier meadow areas may be dominated by such native species as one-sided bluegrass, squirreltail grass, and five-leaf clover, and non-native species such as cheatgrass, red-stemmed filaree, and bulbous bluegrass (*Poa bulbosa*).

Moist or seasonally moist to wet meadow areas often support extensive patches of Baltic rush. Other species characteristic of moist to wet meadow areas include Kentucky bluegrass, clustered field sedge, western buttercup, California hesperochiron (*Hesperochiron californicus*), western blue flag (*Iris missouriensis*), straight-leaved rush (*Juncus orthophyllus*), Nebraska sedge (*Carex nebrascensis*, in wettest areas, where locally abundant), slender cinquefoil (*Potentilla gracilis* var. *fastigiata*), common camas (*Camassia quamash* ssp. *brevflora*), and the non-native species common dandelion. Locally the shrub species yellow rabbitbrush and rubber rabbitbrush (*Chrysothamnus nauseosus*) are invading meadow areas.

Several areas are mapped as big sagebrush scrub/meadow. In these areas, big sagebrush scrub and meadow habitats intergrade extensively, with areas of intermediate habitat.

Spring. Three springs are mapped on the Evans Canyon USGS quadrangle within the HJWA. Two of these are located in T22N R17E Sec. 34, in areas that are a mosaic of big sagebrush scrub and

meadow. The third is in T22N R18E Sec. 30. Both springs in Sec. 34, which are fenced to exclude cattle, support Nebraska sedge and a species of rush (*Juncus* sp.) that was not in flower at the time of the floristic survey. Another species of sedge also occurs around one spring, while common watercress is relatively abundant around the other. The spring in Sec. 30 supports a small stand of Geyer willow. Baltic rush is localized in patches around this spring, and common dandelion is relatively abundant around this spring.

Recent burns. This early successional habitat type includes the 4,400-acre area that was consumed by the 2007 Balls Canyon fire. Ground covers varied throughout the burn area with some Jeffrey pines still standing at higher elevations but no sagebrush habitat remaining on the valley floor. It also includes other, smaller burn areas that have occurred over the past decade in several portions of the Wildlife Area. It is likely that the Balls Canyon fire area vegetation will develop similarly over the next several years to that of these other recent burns.

Shrubs are sparse or nearly absent in these somewhat older burn areas, although occasional individual shrubs from the pre-fire vegetation have survived. Small, post-fire individuals of shrub species, including spineless horsebrush, yellow rabbitbrush, and sometimes big sagebrush and bitterbrush, are present at low density. The subshrub thorny skeleton plant is widespread and sometimes forms dense localized patches. Although bare ground is evident, a wide variety of herbaceous species grows here; many are native species, such as Stansbury's phlox, arrow-leaved balsam-root, one-sided bluegrass, squirreltail grass, western hawksbeard, silvery lupine, woolly mule-ears, five-leaf clover, scabland fleabane, and panicled Zigadenus. Non-native species, such as cheatgrass and red-stemmed filaree, are also abundant on these old burns.

Developed. Several developed areas that are part of an active ranching operation are located in the southern portion of the HJWA. These areas are occupied by buildings, other developed facilities (e.g., corrals), and landscaped or otherwise heavily altered areas.

B. Fauna

METHODOLOGY

Wildlife species descriptions are based on reviews of published and unpublished reports covering the HJWA as well as reconnaissance-level field surveys. The objectives for this work included:

- Compiling an inventory of common wildlife species found in the study area.
- Evaluating habitat quality for wildlife species.
- Developing a list of special-status wildlife species potentially occurring in the study area.
- Identifying and mapping sensitive wildlife habitats within the study area.

Literature Review. A review was conducted of published literature and unpublished materials (Internet research and CDFG internal documents) concerning the wildlife resources at the HJWA, including the results of previous wildlife surveys conducted in and near the HJWA (CDFG 2006, unpublished field data, on file at CDFG's HJWA office). Searches were conducted of CNDDB occurrence records for the Evans Canyon and Beckwourth Pass USGS 7.5' quadrangles and the five surrounding quadrangles within the state of California (CDFG 2008a), Threatened and Endangered Species Lists for the Evans Canyon and Beckwourth Pass USGS quadrangles (USFWS 2008d), and the California Wildlife Habitats Relationships System (CDFG 2006). Local and regional species experts were also consulted.

Field Surveys. To assess potential habitat for both common and special-status wildlife species, reconnaissance-level field surveys were conducted in 2006, 2007 and 2008 (Sustain Environmental, Inc, unpublished data). Reconnaissance surveys consisted of pedestrian transects to visually inspect the variety and quality of wildlife habitat as well as "windshield surveys" where access allowed. Biologists focused particular attention on areas that appeared to provide potentially suitable habitat for the special-status species likely to occur in the region (e.g., riparian areas, springs, sagebrush scrub, woodlands) and noted potential nesting sites, signs (tracks and scat), and/or animal presence. Biologists based the potential for special-status wildlife occurrence upon published literature, database searches, occurrence records from unpublished sources, and their professional experience and judgment. General habitat conditions and observations of all wildlife species encountered were noted.

FINDINGS

Based upon this preliminary assessment, the HJWA provides suitable habitat for 12 species of fish, 17 species of amphibians and reptiles, 141 species of birds, and 66 species of mammals (Appendix E). There are no data for invertebrate species occurrences. General information on wildlife species and habitats occurring within the HJWA are discussed by taxa below.

Invertebrates

Invertebrates are vital to energy and nutrient processing and cycling in ecosystems. All but primary producers are found at all trophic levels, and because of their abundance and diverse habitats, they play a major role in nutrient flow through ecosystems. They are important both as consumers (herbivores, detritivores, and predators) and as secondary producers (prey) (Niwa et al. 2001). No focused invertebrate surveys have been conducted, and there is much to be learned about the diversity of the aquatic and terrestrial invertebrates at this site.

Fishes

CDFG has conducted fishery surveys in the HJWA, especially along Balls Canyon Creek, Evans Creek and Long Valley Creek. These streams provide habitat for several species of native and non-native fish, including brown trout (*Salmo trutta*), speckled dace *(Rhinichthys osculus*) and lahotan redside *(Richarsonius egregius)* (Moyle 2002; CDFG 2006, unpublished field data, on file at CDFG's HJWA office).

Amphibians

Only a few species of amphibians are found in the Great Basin region of California (Stebbins 1985) and no focused amphibian surveys have been conducted at the HJWA. Bullfrogs (*Rana catesbeiana*), western toads (*Bufo boreaus*), and tree frogs (*Pseudacris regilla*) have been documented on site (CDFG 2006, unpublished field data, on file at CDFG's HJWA office). The only other amphibian species known to occur in this region of California is the Great Basin spadefoot toad (*Scaphiopus hammondi intermontanus)* (Stebbins 1985).

Reptiles

No focused inventory of reptiles has been completed for the HJWA. Based upon a review of ranges in California and western Nevada, and the types of habitats present at the Wildlife Area, common reptiles are likely to include western fence lizard (*Sceloporus occidentalis*), northern sagebrush lizard (*Sceloporus graciosus graciosus*), Sierra garter snake (*Thamnophis couchi*), and western rattlesnake (*Crotalus viridis*) (CalHerps 2006).

Birds

Many species of birds use the HJWA at some phase of their lifecycle due to its geographic location and the variety of habitats present. The following discussion addresses the major species guilds found or likely to occur at the Wildlife Area.

Water Birds

The wet meadow habitats and the narrow riparian corridor of Long Valley Creek are important resources to migratory waterfowl and wading birds. They provide roosting, foraging and potential nesting habitat for a number of water birds including several species of shorebirds, great blue heron (*Ardea herodias*), Canadian goose (*Branta canadensis*), and greater sandhill crane (*Grus canadensis tabida*).

Raptors

A wide variety of wintering and/or breeding raptors utilize the HJWA, including bald eagle *(Haliaeetus leucocephalus)*, golden eagle (*Aquila chrysaetos*), red-tailed hawk (*Buteo jamaicensis*), Swainson's hawk (*Buteo swainsoni*), American kestrel (*Falco sparverius*), prairie falcon (*Falco mexicanus*), sharp-shinned hawk (*Accipiter striatus*), and northern harrier (*Circus cyaneus*). Several owl species may also be found on site, including barn owl (*Tyto alba*), short-eared owl (*Asio flammeus*), long-eared owl (*Asio otus*), great horned owl (*Bubo virginianus*), western screech owl (*Otus kennicottii*), flammulated owl (*Otus fammeolus*) and burrowing owl (*Athene cunicularia)*.

Terrestrial Birds

The primary upland game species at the HJWA are chukar (*Alectoris chukar*), mourning dove (*Zenaida macroura*), mountain quail (*Oreotyx pictus*) and California quail (*Callipepla californica*). Other resident, common, non-game bird species include common nighthawk (*Chordeiles minor*), Northern flicker (*Colaptes auratus*), loggerhead shrike (*Lanius ludovicianus*), Clark's nutcracker (*Nucifraga columbiana*), sage thrasher (*Oreoscoptes montanus*) and sage sparrow (*Amphispiza belli*).

Passerines

Neotropical migratory birds are those that breed in North America and winter in Central and South America. Representative species that breed and/or migrate through the Wildlife Area include western kingbird (*Tyrannus verticalis*), tree swallow (*Tachycineta bicolor*), barn swallow (*Hirundo rustica*), willow flycatcher (*Empidonax traillii*), and yellow warbler (*Dendroica petechia*).

Mammals

The HJWA provides habitat for a variety of mammals ranging from game species such as mule deer (*Odocoileus hemionus*) and pronghorn *(Antilocapra americana)*, to carnivores such as coyote (*Canis latrans*), American badger (*Taxidae taxus*), and long-tailed weasel (*Mustela frenata*), to a number of rodents including California ground squirrel (*Spermophilus beecheyi*), black-tailed jackrabbit (*Lepus*

californicus) and American beaver (*Castor canadensis*). Of all these species, the primary management concerns at HJWA revolve around providing winter range for the mule deer herd.

Mule Deer. In California, mule deer generally migrate out of high elevation areas in the fall to valleys and other low-elevation areas that receive less than 2 feet of snow, and then return to mountainous areas as snow melts in the spring (Wallmo 1981, Rogers 1999). The HJWA was acquired primarily to protect this important winter habitat and provide a protected migration corridor for the Loyalton-Truckee mule deer herd. Since the early 1970s, the population of the Loyalton-Truckee herd has been co-managed by the Nevada Department of Wildlife (NDOW) and the CDFG as an interstate herd that summers in California and migrates to winter ranges in Nevada (NDOW 2007).

Suitable habitat for mule deer includes a mosaic of vegetation including forest or meadow openings, dense woody thickets and brush, edge habitat, and riparian areas. A source of drinking water is especially important to mule deer (Zeiner et al. 1990b). Wintering deer use a patchy mosaic of dense cover (>3 feet tall) for shelter and browsing, interspersed with open foraging areas with grasses and forbs. Since winter is a period when mule deer are extremely dependent upon their fat reserves, they require shelter to minimize environmental stress. In spring, deer move up in elevation toward their summer ranges. All deer, and especially pregnant females, depend on abundant new herbaceous growth, particularly perennial grasses, to replenish tissue reserves while migrating. Cover is not as critical as during winter, but is still important for escaping predators.

In fall, deer return to their winter range. During this season, fawns are growing and deer need to store energy for the winter. Cover is important for escape from predators and for protection during the hunting season. Inadequate cover may cause deer to avoid otherwise desireable foraging areas. Patches of cover should be greater than 20 acres and open enough to allow easy movement.

Deer have more specific forage requirements than larger ruminants. Deer digestive tracts differ from cattle and elk in that they have a smaller rumen in relation to their body size and so they must be more selective in their feeding (Wallmo 1981). Instead of eating large quantities of low quality feed like grass, deer must select the most nutritious plants and plant parts (Mule Deer Working Group 2004). While a component of mule deer diet is forbs (broad-leafed herbaceous plants), during winter mule deer are primarily browsers with a diet comprised of leaves and twigs of woody shrubs (Wallmo 1981).

The primary limiting factor for deer at the HJWA is lack of quality forage, now exacerbated by the Balls Canyon fire. Regeneration of forage plants after severe fires can be slow.

C. Endangered, Threatened and Rare Species

Species that are legally protected or otherwise considered sensitive by federal, state or local resource conservation agencies and organizations are commonly referred to as special-status species. For the purposes of this plan, the designation of "special status" includes all of the following:

- Species listed as threatened or endangered under the federal Endangered Species Act (ESA) or California ESA
- Species of special concern as identified by the U.S. Fish and Wildlife Service (USFWS) or CDFG
- Species fully protected in California under the California Fish and Game Code
- Species identified as rare, threatened or endangered by the California Native Plant Society (CNPS)

1. Special Status Plants

Preliminary floristic studies conducted in support of this land management plan indicate that 19 special-status plant species have the potential to occur on or in the vicinity of the HJWA (Table III-b) (USFWS 2008a, b, c, CNPS 2008, CDFG 2008a, b). Of these, 8 species are designated as rare, threatened or endangered in California and elsewhere (CNPS List 1B) and 11 are designated as rare, threatened or endangered in California but common elsewhere (CNPS List 2). Plants on the CNPS List 1 or 2 are legally protected under the provisions of the California Environmental Quality Act (CEQA) and CEQA Guidelines.

Four special-status plants have been confirmed to be present on, or immediately adjacent to, the Wildlife Area: purple milk-vetch (*Astragalus agrestis*), Nevada daisy (*Erigeron nevadincola*), Webber's ivesia (*Ivesia webberi*), and golden violet (*Viola aurea*) (CDFG 2008a, Tibor 2001, CNPS 2008). Webber's ivesia is a CNPS List 1B species and a candidate for listing under the federal ESA. The other three documented species are on List 2. Table III-c summarizes CNDDB occurrence records for these four species. None of the four were observed during the 2007 or 2008 floristic surveys.

Table III-b. Legally Protected Plant Species with the Potential to Occur in the Vicinity of the Hallelujah Junction Wildlife Area, Lassen and Sierra Counties, California

California Native Plant Society (CNPS) Designations:

List 1B: Plants rare, threatened, or endangered in California and elsewhere
List 2: Plants rare, threatened, or endangered in California, but more common elsewhere

USFWS Designation: FC = Federal Candidate for listing under the Endangered Species Act

Common name Species name	STATUS	HABITAT	FLOWER PERIOD
Purple milk-vetch Astragalus agrestis	CNPS 2	Vernally moist places, Great Basin scrub, meadows and seeps.	April-July
Lemmon's milk-vetch Astragalus lemmonii	CNPS 1B	Great Basin scrub, meadows and seeps, marshes, lake shores.	May-August
Lens-pod milk-vetch Astragalus lentiformis	CNPS 1B	Sandy volcanic soil, Great Basin scrub, lower montane coniferous forest.	May-July
Pulsifer's milk-vetch Astragalus pulsiferae var. pulsiferae	CNPS 1B	Sandy or rocky, usually granitic soil, Great Basin scrub, lower montane coniferous forest, pinyon and juniper woodland.	May-August
Valley sedge Carex vallicola	CNPS 2	Moist places, Great Basin scrub, meadows and seeps.	July-August
Nevada daisy Erigeron nevadincola	CNPS 2	Rocky soil, Great Basin scrub, lower montane coniferous forest, pinyon and juniper woodland.	May-July
Ochre-flowered buckwheat Eriogonum ochrocephalum var. ochrocephalum	CNPS 2	Volcanic or clay soil, Great Basin scrub, pinyon and juniper woodland.	May -June
Alkali hymenoxys Hymenoxys lemmonii	CNPS 2	Subalkaline soil, Great Basin scrub, lower montane coniferous forest, meadows and seeps.	June-August
Sierra Valley ivesia Ivesia aperta var. aperta	CNPS 1B	Vernally moist places, usually volcanic soil, Great Basin scrub, lower montane coniferous forest, meadows and seeps, pinyon and juniper woodland, vernal pools.	June-Sept
Dog Valley ivesia Ivesia aperta var. canina	CNPS 1B	Rocky volcanic soil, openings in lower montane coniferous forest, dry meadows.	June-August
Bailey's ivesia Ivesia baileyi var. baileyi	CNPS 2	Rocky volcanic soil, Great Basin scrub, lower montane coniferous forest.	May-August
Plumas ivesia Ivesia sericoleuca	CNPS 1B	Vernally moist places, usually volcanic soil, Great Basin scrub, lower montane coniferous forest, meadows and seeps, vernal pools.	May-Sept
Webber's ivesia Ivesia webberi	FC CNPS 1B	Sandy or gravelly soil, sometimes volcanic ash, Great Basin scrub, lower montane coniferous forest, pinyon and juniper woodland.	May-July
Sagebrush loeflingia Loeflingia squarrosa var. artemisiarum	CNPS 2	Sandy soil, desert dunes, Great Basin scrub, Sonoran desert scrub.	April-May
Suksdorf's broom-rape Orobanche ludoviciana var. arenosa	CNPS 2	Great Basin scrub.	June-Sep/Oct
Sticky pyrrocoma Pyrrocoma lucida	CNPS 1B	Alkaline clay soil, Great Basin scrub, lower montane coniferous forest, meadows and seeps.	July-October
Winged dock Rumex venosus	CNPS 2	Sandy soil, Great Basin scrub.	May-June
Green-flowered prince's plume Stanleya viridiflora	CNPS 2	White ash deposits, Great Basin scrub.	May-August
Golden violet Viola aurea	CNPS 2	Sandy soil, Great Basin scrub, pinyon and juniper woodland.	April-June

Table III-c. Locations of CNDDB Occurrence Records for CNPS List 1 and 2 Plant Species on, or Immediately Adjacent to, the Hallelujah Junction Wildlife Area

SPECIES	Record #	Township Range Section	Notes
Purple milk-vetch Astragalus agrestis	1	T21N R18E Sec. 30	Just outside Wildlife Area boundary
Nevada daisy Erigeron nevadincola	4	T22N R17E Secs. 25, 36	
	5	T21N R18E Sec. 6	
	6	T21N R17E Sec. 4	
	7	T21N R17E Sec. 2	Within Balls Canyon fire area
	8	T21N R18E Sec. 7	
	9	T21N R17E Sec. 4	
	10	T21N R18E Sec. 7	
	11	T21N R18E Sec. 18	
	12	T21N R17E Sec. 13	
	13	T21N R18E Sec. 30	Just outside Wildlife Area boundary
	28	T21N R17E Sec 1	
Webber's ivesia Ivesia webberi	8	T21N R17E Sec. 11	Within Balls Canyon fire area. Mapped location was searched May 2008, but species not observed
	10	T22N R17E Sec. 36	Just inside Wildlife Area boundary
Golden violet Viola aurea	6	T21N R17E Sec. 12	Along U.S. 395
	7	T21N R17E Sec. 1, T22N R17E Sec. 36	

Source: California Natural Diversity Database (CDFG 2008a)

DESCRIPTIONS OF SPECIAL STATUS PLANT SPECIES

Known to Occur

Purple milk-vetch *(Astragalus agrestis)*
Status: CNPS List 2

PHOTO: Mrs. W.D. Bransford

Purple milk-vetch is a low perennial herb in the large and taxonomically difficult genus *Astragalus* in the legume family (Fabaceae). It has pinnately compound leaves with 9-23 lanceolate to ovate leaflets. The pea-like flowers and the pods (fruits) occur in a dense head-like cluster; the flowers are pink-purple to white, and the pods are papery but not inflated. Identification of species of *Astragalus* is often difficult and requires mature pods, but the dense, head-like flower cluster of this species is somewhat distinctive.

In California, purple milk-vetch occurs only in Lassen and Sierra counties, except for one reported Mono County collection location. The occurrence near the HJWA is the only known Sierra County location. Outside the state, purple milk-vetch ranges to the

Rocky Mountain states and Yukon Territory. In California, it grows in seasonally moist soil in big sagebrush scrub and meadows.

The CNDDB reports one occurrence of purple milk-vetch in the vicinity of the study area, located along Long Valley Creek in T21S R18E Sec. 30. If mapped accurately, this location is just outside the Wildlife Area boundary. Habitat in this vicinity consists of narrow zones of meadow and riparian scrub habitat adjacent to the creek and associated drainages interspersed with big sagebrush scrub habitat. The CNDDB record indicates that the species occurs at this location with big sagebrush, yellow rabbitbrush, and interior rose, indicating a transitional area between big sagebrush scrub and riparian.

Nevada daisy *(Erigeron nevadincola)*
Status: CNPS List 2

PHOTO: Gary A. Monroe, USDA-NRCS

Nevada daisy is a low perennial herb in the sunflower family (Asteraceae), with pubescent stems and leaves. The typically erect stems are 6 inches (15 cm) tall, occasionally to 1 feet (30 cm) tall. The leaves are linear to narrowly oblanceolate. The numerous flower heads have all the phyllaries equal and have numerous conspicuous white ray flowers (usually tinged bluish or pinkish below) and a disk of yellow disk flowers. Technical characterizations are needed to distinguish this species from related species.

In California, Nevada daisy occurs only in Lassen, Sierra, Plumas and Placer counties, with only a few occurrences in the latter two counties. It also occurs in northern Nevada. It grows in rocky soil in Great Basin scrub, juniper and pinyon-juniper woodland, and lower montane coniferous forest.

Eleven populations of Nevada daisy are mapped by the CNDDB within or just outside the boundary of the Wildlife Area (Table III-c). These locations are widely distributed in the southern two-thirds of the area. The CNDDB records indicate that the species occurs in both big sagebrush scrub and juniper woodland in this area. A search of two of these locations, in T21N R18E Sec. 7 (CNDDB Occurrence No. 8) and in T21N R18E Sec. 30 (CNDDB Occurrence No. 13), did not uncover this species (Sustain Environmental, Inc, unpublished field data).

Webber's ivesia *(Ivesia webberi)*
Status: Federal Candidate for Listing, CNPS List 1B

PHOTO: © 2006 Dean Wm Taylor

Webber's ivesia is listed on CNPS List 1 (Tibor 2001, CNPS 2008). It is also a "candidate" species for federal listing (USFWS 2008c). In addition, it is listed as "threatened" in Nevada by the Nevada Native Plant Society (Nevada Natural Heritage Program 2008). It is a low perennial herb in the rose family (Rosaceae), growing from a rosette of basal leaves that are pinnately compound with 4-8 leaflets to a side; each leaflet is divided to the base into 5-12 linear to lanceolate lobes, giving the leaves a distinctive appearance.

The stems are up to 6 inches (15 cm) tall and have a pair of opposite leaves; this characteristic is unique in the genus *Ivesia*. Each stem terminates in a cluster of yellow flowers that is head-like in flower but open in fruit.

Webber's ivesia is known only in Lassen, Sierra and Plumas counties in California and in adjacent extreme western Nevada. It occurs in rocky (or sandy or gravelly), mainly volcanic soil in Great Basin scrub (primarily), lower montane coniferous forest, and juniper woodland.

The CNDDB mapped two populations of Webber's ivesia within the Wildlife Area. One of these localities (CNDDB Occurrence No. 8) was also reported and mapped by Witham (unpublished report, 1992). This location, in T21N R17E Sec. 11, is within the Balls Canyon fire area. The other mapped location within the Wildlife Area (CNDDB Occurrence No. 10) is located east of U.S. 395, just inside (south of) the Wildlife Area boundary, occurring in big sagebrush scrub.

Golden violet *(Viola aurea)*
Status: CNPS List 2

PHOTO:: Mrs. W.D. Bransford

Golden violet is a perennial from a woody taproot in the violet family (Violaceae). The leaves are both basal and cauline, long-petioled, oblong to nearly round, almost as wide as long, rounded and toothed to shallowly lobed at the apex, and are conspicuously canescent. The canescent leaves distinguish this species from the sometimes similar, widespread species mountain violet (*Viola purpurea*), which has pubescent, but not canescent, leaves. The flowers have the typical violet shape and are solitary on long pedicels from the leaf axils; the petals are yellow, with the lower three veined dark brown.

Golden violet occurs at widely scattered localities in California, in (from north to south) Lassen, Sierra, Mono, eastern Kern, San Bernardino, and San Diego counties. The two locations in the vicinity of the HJWA are the northernmost known localities in California. The species also occurs in western Nevada. It occurs in sandy soils in Great Basin scrub, pinyon and juniper woodland.

Two CNDDB occurrences are located in or near the study area, approximately a mile apart. One of these (CNDDB Occurrence No. 6), located in T21N R17E Sec. 12, is described as being along U.S. 395, with parts slightly outside the Wildlife Area boundary. The second occurrence (CNDDB Occurrence No. 7) is on both sides of the Lassen-Sierra county line, in T21N R17E Sec. 1 and T22N R17E Sec. 36. Both occurrences are in big sagebrush scrub.

OTHER PLANT SPECIES OF INTEREST

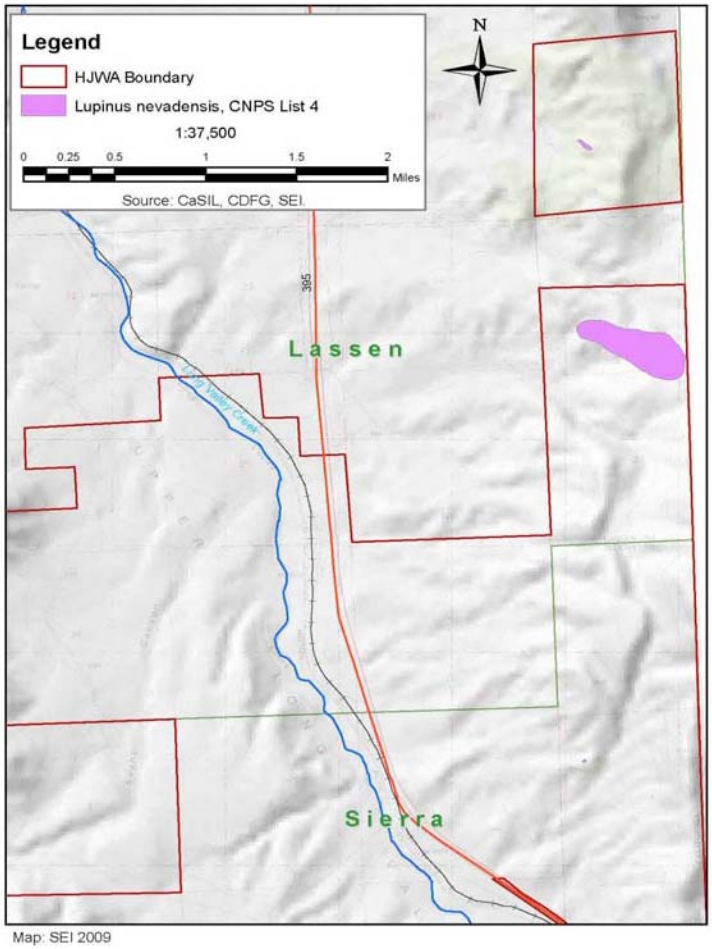
Nevada lupine *(Lupinus nevadensis)*
Status: CNPS List 4 (Limited Distribution – Watch List)

PHOTO: Gary A. Monroe, USDA-NRCS

Nevada lupine has no federal or state status, and does not fall under any specific regulatory authority. It is a perennial lupine in the legume family (Fabaceae). The leaves and stems are pubescent with conspicuous, relatively long, soft, spreading hairs, a characteristic that distinguishes it from many similar species, including silvery lupine, which is widespread in the Wildlife Area, including the areas where Nevada lupine occurs. The leaves are petioled and palmately compound, as is typical of lupines, with 6-10 oblanceolate leaflets. The inflorescence is a raceme of blue, pea-like flowers.

Nevada lupine occurs east of the Sierra-Cascade mountain axis from Lassen County to Inyo County in California. It also occurs in Nevada and Oregon. It occurs in Great Basin scrub, juniper and pinyon-juniper woodland.

Nevada lupine has been observed at three locations in the extreme eastern portion of the Wildlife Area. In T22N R18E SW and SE ¼ Sec. 30, Nevada lupine is widespread in both big sagebrush scrub and juniper woodland. At the other two locations, in T21N R18E NW ¼ Sec. 7 and T22N R18E SW ¼ Sec. 19, Nevada lupine appears to be more localized, in areas of juniper woodland habitat. It is likely that Nevada lupine is more widespread, at least in the eastern portion of the wildife area.



Map: SEI 2009

2. Special Status Wildlife

A review of the California Natural Diversity Database (CNNDB) and the USFWS online inventory of Threatened and Endangered Species by USGS quadrangles indicates that 32 special-status wildlife species have the potential to occur in the vicinity of the HJWA (CDFG 2008a, 2009; USFWS 2008d). California Bird Species of Concern (Shuford and Gardali 2008) and Birds of Conservation Concern 2008 (USFWS 2008e) were included in the review of potentially occurring special-status wildlife species. The resulting list includes 1 fish, 1 amphibian, 1 lizard, 19 bird species, and 10 mammals.

Table III-d summarizes information on the special-status wildlife species that have the potential to occur on or near the HJWA, including their regulatory status, habitat requirements, and likelihood of occurring within the Wildlife Area. Of the 32 species, 4 taxa (Lahontan cutthroat trout, Sierra Nevada yellow-legged frog, olive-sided flycatcher and Townsend's big-eared bat) are highly unlikely to occur based on local habitat conditions and are not discussed further in the text. The remaining 28 species include 11 taxa confirmed as occurring in the Wildlife Area as either resident or migrant species and 17 that will require focused surveys to determine their presence or absence. Species accounts for these special-status species follow below.

Table III-d. Special Status Wildlife Species with the Potential to Occur in the Vicinity of the Hallelujah Junction Wildlife Area

U.S. Fish and Wildlife Service (USFWS)
FE = Federal Endangered FT = Federal Threatened FD = Federal Delisted FC = Federal Candidate
CH = Critical Habitat Designation BCC = Birds of Conservation Concern

U.S. Forest Service (USFWS)
FSS = Forest Service Sensitive

U.S. Bureau of Land Management (BLM)
BLMS = BLM Sensitive

California Department of Fish and Game (CDFG)
SE = State Endangered ST = State Threatened SFP = State Fully Protected SSC = State Species of Concern WL=Watch List

Western Bat Working Group (WBWG)
WBWG High = High Priority WBWG Med = Medium Priority WBWG Low = Low Priority

Potential for Occurrence Evaluation Criteria:
Observed = Species documented in or immediately adjacent to the HJWA, and suitable habitat is available on or near HJWA
High = Species known to occur in the area and suitable habitat is present on or near the HJWA.
Moderate = HJWA is within the known range of this species and suitable habitat is present.
Low = HJWA does not provide suitable habitat and/or is outside of the known range and distribution.

SPECIES[1]	STATUS			HABITAT	POTENTIAL FOR OCCURRENCE[2]
	FED USFWS USFS BLM	STATE CDFG	OTHER WBWG		
FISH					
Lahontan cutthroat trout *Oncorhynchus clarki henshawi*	FT			One of two species of native trout found east of the Sierra Nevada, associated with coldwater streams and lakes. Native populations are restricted to the Truckee, Walker and Carson river basins.	Low. There are antedotal reports of their historical occurrence in Balls Canyon Creek.

SPECIES[1]	STATUS			HABITAT	POTENTIAL FOR OCCURRENCE[2]
	FED USFWS USFS BLM	STATE CDFG	OTHER WBWG		
AMPHIBIANS					
Sierra Nevada yellow-legged frog *Rana sierrae*	FC, FSS	SSC		Restricted to montane regions of California and adjacent Nevada. Historically found in lakes, ponds, marshes, meadows, and streams at 4500-12,000' elevation.	Low-None. No suitable breeding habitat in HJWA.
REPTILES					
Northern sagebrush lizard *Sceloporus graciosus graciosus*	BLMS			Found east of the Sierra Nevada in the Great Basin. Commonly found in sagebrush and other types of shrublands. Prefers open areas with scattered low bushes and lots of sun.	Observed.
BIRDS					
Greater sage-grouse *Centrocercus urophasianus* (nesting and leks)	FSS, BLMS	SSC		A sagebrush habitat obligate species. Lek sites tend to occur in less-vegetated areas with low sage, and nesting and wintering sites are located in areas dominated by various sagebrush species, especially big sagebrush.	Low. Nearest known lek sites (NV) are considered extirpated. There are suitable nesting and brood-rearing habitat nearby and on site.
Northern goshawk *Accipiter gentilis* (nesting)	FSS, BLMS	SSC		Prefers middle and higher elevations and mature, dense conifer forests.	Low. Marginal habitat existed along the western, higher elevation portion of the Wildlife Area. Most of this area burned in 2007.
Golden eagle *Aquila chrysaetos* (nesting and wintering)	BCC, BLMS	FP, WL		Habitat typically includes rolling foothills, mountain areas, sage-juniper flats, desert. Nests on cliffs of all heights and in large trees in open areas.	Observed.
Ferruginous hawk *Buteo regalis* (wintering)	BCC, BLMS	WL		Frequents open grasslands, sagebrush flats, desert scrub, low foothills surrounding valleys and fringes of pinyon-juniper habitats.	Moderate. Likely to occur as winter visitor.
Swainson's hawk *Buteo swainsoni*	BCC, FSS	ST		Nests in riparian woodlands and isolated trees; forages in grasslands, shrublands and agricultural fields.	Observed. Potential nesting habitat is available on the east side of U.S. 395.

SPECIES[1]	STATUS			HABITAT	POTENTIAL FOR OCCURRENCE[2]
	FED USFWS USFS BLM	STATE CDFG	OTHER WBWG		
BIRDS					
Northern harrier *Circus cyaneus*		SSC		Nests and forages in open wetlands, including marshy meadows; wet, lightly grazed pastures; old fields; freshwater and brackish marshes; also dry uplands, including upland prairies, mesic grasslands, drained marshlands, croplands, cold desert shrub-steppe, and riparian woodland.	Observed. Suitable nesting and foraging habitat on site.
Bald eagle *Haliaeetus leucocephalus* (nesting and wintering)	FD, BCC	SE, FP		Winters throughout California near lakes, streams and rivers where prey is abundant. In California, most eagles nest in the mountainous regions of northeastern California near lakes and reservoirs.	Moderate. May be occasional winter visitor to area, but no suitable nesting habitat nearby.
Prairie falcon *Falco mexicanus* (nesting)	BCC	WL		Common to grasslands and shrub-steppe habitats. Requires rock outcrops or cliffs for nesting; also forages in agricultural fields.	Observed. Suitable foraging habitat on site, but no suitable nesting habitat.
American peregrine falcon *Falco peregrinus anatum*	FD, BCC, FSS	SE, FP		Found in a variety of habitats, most with cliffs for nesting and open areas for foraging. Preys mostly on birds, ranging in size from songbirds to small geese.	Low. May be occasional visitor to area. No suitable nesting habitat in the immediate vicinity.
Greater sandhill crane *Grus canadensis tabida*	FSS	ST, FP		Nests in wet meadows, marshlands and flooded fields of northeastern California and western Oregon. Forages in a variety of habitats.	Observed. CDFG reports cranes in the southern meadows of HJWA.
Short-eared owl *Asio flammeus* (nesting)		SSC		Nests and roosts on the ground in open meadows and grasslands.	High. Suitable habitat is present and within known range.
Long-eared owl *Asio otus* (nesting)		SSC		Prefers thickly wooded riparian areas for nesting and roosting with nearby open spaces for hunting.	High. Known to occur locally in isolated tree stands.
Burrowing owl *Athene cunicularia*	BCC, BLMS	SSC		Habitat consists of open, dry grassland and desert habitats; and in grass, forb and open shrub stages of juniper and ponderosa pine habitats. Uses rodent or other burrows for roosting and nesting cover.	Moderate. Very sparse distribution in the Great Basin, suitable habitat is present.

SPECIES[1]	STATUS			HABITAT	POTENTIAL FOR OCCURRENCE[2]
	FED USFWS USFS BLM	STATE CDFG	OTHER WBWG		
BIRDS					
Olive-sided flycatcher *Contopus cooperi*	BCC	SSC		Summer resident and migrant from April-October. Nests in coniferous forests throughout California.	Low. No suitable nesting habitat. May occur as migrant.
Willow flycatcher *Empidonax traillii* (nesting)	FSS	SE		Prefers broad, open river valleys or large mountain meadows with lush growth of shrubby willows, wet meadow and montane riparian habitats at 2,000–8,000' elevation. Dense willow thickets are required for nesting and roosting.	Moderate. May occur as seasonal migrant. Marginal nesting habitat along Balls Canyon Creek and associated wetlands.
Loggerhead shrike *Lanius ludovicianus*	BCC	SSC		Prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches.	Observed. Suitable nesting and foraging habitat is present.
Bank swallow *Riparia riparia* (nesting)		ST		Nests in vertical banks and cliffs with fine textured or sandy soils near streams, rivers, lakes, and ocean. Forages primarily over water.	Observed. Suitable nesting and foraging habitat is present along Long Valley Creek. Nesting colony documented near northern end of Long Valley Creek.
California yellow warbler *Dendroica petechia brewsteri* (nesting)	BCC	SSC		Nests in riparian woodland and riparian scrub habitats. Forages in a variety of wooded and shrub habitats during migration.	High. Suitable nesting habitat is present in area.
Yellow-headed blackbird *Xanthocephalis xanthocephalis*		SSC		Summer resident in California. Closely associated with freshwater marshy areas with tall emergent vegetation.	Observed. CDFG has observed this species along Long Valley Creek.
MAMMALS					
Spotted bat *Euderma maculatum*	BLMS	SSC	High	Inhabits ponderosa pine regions in early summer, but descends to deserts at lower elevations in the fall. Roosts in rock crevices.	Moderate. Suitable habitat is present in area.
Townsend's big-eared bat *Corynorhinus townsendii*	FSS, BLMS	SSC	High	Prefers arid open areas near coniferous forests. Requires large protected caves and mines for roosting.	Low. No suitable roosting habitat in vicinity.

SPECIES[1]	STATUS			HABITAT	POTENTIAL FOR OCCURRENCE[2]
	FED USFWS USFS BLM	STATE CDFG	OTHER WBWG		
MAMMALS					
Long-legged myotis *Myotis volans*			High	Lives primarily in coniferous forests near water sources. Roosts in trees, buildings or rock crevices. Hibernates in caves in winter.	Moderate. Suitable habitat is present in area.
Fringed myotis *Myotis thysanodes*	BLMS		High	Prefers woodlands or grasslands near water sources at mid-elevations. Roosts in caves, mines, or buildings.	Moderate. Suitable habitat is present in area.
Pallid bat *Antrozous pallidus*	FSS, BLMS	SSC	High	Typically associated with rocky outcrops with dry open areas but occasionally found in evergreen forests.	High. Suitable habitat is present in area.
Western white-tailed jackrabbit (=hare) *Lepus townsendii townsendii*		SSC		Preferred habitats are sagebrush, subalpine conifer, juniper, alpine dwarf-shrub and perennial grassland. Also uses low sagebrush, wet meadow and early successional stages of various conifer habitats.	Moderate. Suitable habitat is present.
Pygmy rabbit *Brachylagus idahoensis*	BLMS	SSC		Associated with dense sagebrush regions with deep soft soil for foraging, cover, and burrowing.	Low. Nearest documented location for this species is Honey Lake Valley.
Ringtail *Bassariscus astutus*		FP		Resides in hollow trees, logs, snags, and abandoned burrows in forested, shrubland, and rocky areas near a permanent water source.	Moderate. Suitable habitat is present along Balls Creek.
American badger *Taxidea taxus*		SSC		Preferred habitats are dry, open, treeless regions, prairies, parklands, and cold desert areas with friable soils.	Observed. Suitable habitat is present for burrows and small mammals for foraging.
Desert bighorn sheep *Ovis canadanesis nelsoni*	FSS, BLMS			Prefers open areas of low-growing vegetation for feeding, in close proximity to steep, rugged terrain for escape, lambing, and bedding, and an adequate source of water.	Observed. The high elevation slopes east of HWY 395 offer potential habitat for this species.

[1] Source: CDFG 2008a, 2009; CalHerps 2009, USFWS 2008d, USFWS 2008e.

NOTE: Taxonomic order, scientific names, and listing status designations are subject to change. Taxonomic order for bird species follows the AOU Checklist of North American Birds (1998 with supplements through 2008; for mammals, the Complete List of Amphibian, Reptile, Bird and Mammal Species in California (excluding subspecies) (CDFG 2008c). Please consult with CDFG and published literature for most up-to-date listing designations.

DESCRIPTIONS OF SPECIAL-STATUS WILDLIFE SPECIES*

Reptiles

Northern sagebrush lizard *(Sceloporus graciosus graciosus)*
Status: BLM Sensitive
Potential to Occur: Observed.

PHOTO: wormwould Creative Commons

In California, northern sagebrush lizards are found in the Great Basin desert regions east of the Sierra Nevada and in northeastern California (CalHerps 2009). They co-occur with the western fence lizard (*S. occidentalis*), but are usually found at higher elevations (up to 10,500 ft. elevation). As their name implies, Northern sagebrush lizards live in sagebrush and other shrublands, preferring open areas with scattered low bushes and basking sites. Sagebrush lizards become active in late spring, laying eggs in June or July. Hatchlings usually appear in August or September (St. John 2002).

Birds

Greater sage-grouse *(Centrocercus urophasianus)*
Status: Forest Service Sensitive, BLM Sensitive; California Species of Special Concern (nesting & leks)
Potential to Occur: Low. Historical occurrence records but presumed extirpated in area; suitable nesting and brood-rearing habitat exists

PHOTO: Gary Kramer, USFWS

Greater sage-grouse are year-long residents throughout most of the sagebrush-dominated portions of the Great Basin, Columbia Plateau, western Great Plains and Rocky Mountains in 11 western states, and Alberta and Saskatchewan in Canada (Schroeder et al. 2004). Their range in California includes portions of the Modoc Plateau and Great Basin in parts of Modoc, Lassen, Mono, and Inyo counties (Hall et al. 2008, Grinnell and Miller 1944). They formerly occupied portions of eastern Siskiyou, Shasta, Plumas, Sierra, and Alpine counties in California (Hall 1995). In northeastern California, greater sage-grouse are most abundant in eastern Lassen County, north of Honey Lake and east of Eagle Lake, and in the Surprise Valley in northeastern Modoc County. These areas contain approximately two-thirds of all of California's sage-grouse populations (Hall et al. 2008, Hall 1995).

* Four taxa that are highly unlikely to occur based on local habitat conditions (i.e., Lahontan cutthroat trout, Sierra Nevada yellow-legged frog, olive-sided flycatcher, and Townsend's big-eared bat) are not discussed further here.

One of the sagebrush obligate species, greater sage-grouse are dependent upon sagebrush habitats for food and cover throughout their life cycle. Sage-grouse males form leks (strutting grounds) opportunistically at sites within or adjacent to potential nesting habitat. Leks, or breeding display sites, typically occur in open areas surrounded by sagebrush where visibility among males is unobstructed by vegetation or topography (Connelly et al. 2000). Nesting sage-grouse usually select sites where the mean height of sagebrush ranges from 29 to 80 cm, and nests tend to be under the tallest sagebrush within a stand (ibid). Early brood-rearing areas are generally located in sagebrush habitats near the nest site, as the season progresses, sage-grouse move to more mesic sites, including meadows, riparian areas and croplands where there is both moisture and adequate insect prey for the juvenile birds (Hall et al. 2008). Although presumed extirpated in the area, an unconfirmed sighting was reported near Haskell Peak.

Northern goshawk *(Accipiter gentiles)*
Status: Forest Service Sensitive and BLM Sensitive; California Species of Special Concern (nesting)
Potential to Occur: Low. Marginal nesting habitat in higher western elevations prior to 2007 fire

PHOTO: Alan and Elaine Wilson, Free Cultural Work

Northern goshawks are the largest of North American accipiters and are found in middle- to high- elevation coniferous forests throughout the United States and Canada. In California, northern goshawks are considered uncommon to rare residents, and are distributed throughout the northern coast range, across the Cascades, the Modoc Plateau, Warner Mountains and south through the Sierra Nevada (Keane 2008, Small 1994). Goshawks prefer mature, dense tree stands with well-developed understory for nesting habitat; usually there is a water source within their nesting territory (Johnsgard 1990; Zeiner et al. 1990a). As with other accipiters, birds are their preferred prey, although they also feed on numerous species of small mammals, reptiles and even insects (Keane 2008, Johnsgard 1990).

Golden eagle *(Aquila chrysaetos)*
Status: Federal Bird of Conservation Concern, BLM Sensitive; California Fully Protected, Watch List
Potential to Occur: Observed

PHOTO: Immature Golden Eagle, USFWS

One of the largest raptors in North America, golden eagles are relatively common throughout the western United States where there is suitable foraging habitat and nest sites (Kochert et al. 2002). Their diet consists mostly of rabbits and rodents, but also includes other mammals, reptiles, birds, and some carrion (Zeiner et al. 1990a). Golden eagles nest most frequently on cliff ledges, but may build nests in trees large enough to support their weight. They often maintain alternative nest sites and reuse old nests for generations (ibid.).

Ferruginous hawk *(Buteo regalis)*
Status: Federal Bird of Conservation Concern, BLM Sensitive; California Watch List
Potential to Occur: Moderate. Likely winter visitor

PHOTO: Courtesy © 2008 Ron Wolf

Primarily a winter visitor to California, ferruginous hawks are found in arid to semi-arid regions, shrub steppe, grasslands, and agricultural areas in southwestern Canada, the western United States and northern Mexico (Johnsgard 1990). They are one of the largest hawks: adults are about 2 feet long with a wingspan of 4 1/2 feet. The adults have three color phases, the most common of which is the "light" phase, characterized by reddish brown above and white below with red-brown legs. When flying overhead the legs of the "light" phase form a characteristic "V" contrasting with the white belly area. Generally, ferruginous hawks are not known to nest in California, but one confirmed nest site was documented southwest of Termo, in Lassen County (approximately 100 miles north of HJWA) during the early 1990s (P. Bloom, Western Foundation of Vertebrate Zoology, personal communication). Ferruginous hawks build large stick nests in isolated trees or isolated clumps of trees in exposed locations, but they will nest on the ground in treeless areas.

Swainson's hawk *(Buteo swainsonii)*
Status: Federal Bird of Conservation Concern, BLM Sensitive; California Threatened
Potential to Occur: Observed. Potential nesting habitat east of U.S. 395

PHOTO: Pharaoh Hound, Creative Commons

Swainson's hawks breed in the western United States and Canada and winter in South America as far south as Argentina. California has two distinct Swainson's hawk breeding areas: the Central Valley and the Great Basin (including portions of Shasta, Siskiyou, Modoc and Lassen Counties) (Woodbridge 1998). Swainson's hawks are adapted to open habitats with sparse tree cover, and have become increasingly dependent on agriculture as native plant communities are converted to agricultural lands. In the Great Basin region of California, Swainson's hawks often nest in small junipers adjacent to or in close proximity to natural meadows or agricultural fields (R. Cull, unpublished data). The California vole (*Microtus californicus*) and Belding's ground squirrel (*Spermophilis beldingi*) are dietary staples; however, a variety of other small mammals, birds, reptiles and insects are also consumed (Woodbridge 1998).

Northern harrier *(Circus cyanus)*
Status: California Species of Special Concern
Potential to Occur: Observed

PHOTO: Alan and Elaine Wilson, Free Cultural Work

Northern harriers nest and forage in a variety of open habitats including marshes, grasslands, low shrublands, and agricultural fields. Harriers are ground nesters and prey on a variety of small animals, particularly rabbits, mice, voles and small birds (Johnsgard 1990).

Bald eagle *(Haliaeetus leucocephalus)*
Status: Federal Delisted, Bird of Conservation Concern; California Endangered, Fully Protected (wintering and nesting)
Potential to Occur: Moderate. May be occasional visitor, but no suitable nesting habitat nearby

PHOTO: Alan and Elaine Wilson, Free Cultural Work

Bald eagles winter throughout most of California at lakes, reservoirs, river systems, and some rangelands and coastal wetlands (ibid.). The breeding range of bald eagles is primarily in mountainous habitats near reservoirs, lakes, and rivers in the northern portion of the state (Small 1994). Fish constitute most of the bald eagle's diet, but wintering birds frequent wetland habitats in search of dead and dying waterfowl and other water birds (Buehler 2000).

Bald eagle nesting territories are associated primarily with young or mature forests of ponderosa and mixed conifer types with varying canopy closure, but can be found in all forest types from blue oak savanna to lodgepole pine types (Buehler 2000, Verner and Boss 1980). Bald eagles usually nest in overstory ponderosa or sugar pine with foliage shading the nests, within 0.5 mile of a large body of water, and with low human disturbance (Verner and Boss 1980). Total canopy closure in stands that support bald eagle nests is usually less than 40% (ibid.).

Prairie falcon *(Falco mexicanus)*
Status: Federal Bird of Conservation Concern; California Watch List
Potential to Occur: Observed. No suitable nesting habitat on site


PHOTO: Doug Backlund, Public Domain

Prairie falcons are found throughout the arid West, usually associated with shrub-steppe and grassland habitats (Steenhof 1998). Prairie falcons usually nest on sheltered cliff ledges or rock outcrops overlooking large open areas, although they sometimes use old raven nests (Zeiner et al. 1990a). Prairie falcons prey on medium-sized mammals and birds and range widely while foraging, searching large areas for prey. Prairie falcons are regularly observed foraging at the HJWA.

American peregrine falcon *(Falco peregrinus anatum)*
Status: Federal Delisted; California Endangered, Fully Protected
Potential to Occur: Low. May be occasional visitor, but no suitable nesting habitat nearby


PHOTO: Doug Backlund, Public Domain

Historically, the American peregrine falcon was found throughout the Sierra Nevada and most of California (Grinnell and Miller 1944). Now, it is uncommon as a breeding resident and uncommon as a migrant (Zeiner et al. 1990a). The American peregrine falcon nests on vertical cliffs with large potholes or ledges that are inaccessible to land predators. Because this species preys primarily on birds, nest sites are usually located near areas that support large avian populations, such as coastal areas or wetlands. Peregrine falcons may travel long distances from their nesting grounds to foraging habitats (Grinnell and Miller 1944, Zeiner et al. 1990a). Breeding activity begins as early as March and ends in August (Zeiner et al. 1990a).

Greater sandhill crane *(Grus canadensis tabida)*
Status: Forest Service Sensitive; California Threatened, Fully Protected
Potential to Occur: Observed. Reported in southern meadows and pastures of HJWA


PHOTO: © Rebecca Cull

The greater sandhill crane is one of six subspecies of sandhill cranes found in North America (Littlefield 1989). There are five recognized populations of greater sandhill cranes. The Central Valley population winters in California's Central Valley, and nests in northeastern California, eastern Oregon, portions of Nevada and Washington, and British Columbia. They congregate in large flocks at night roosts and disperse during the day to forage in grasslands and emergent wetlands, as well as moist croplands with rice or corn stubble. Greater sandhill cranes have been observed in the south-central meadows and pastures of HJWA but are not known to nest in the area (J. Dawson, CDFG, personal communication).

Short-eared owl *(Asio flammeus)*
Status: California Species of Special Concern
Potential to Occur: High. Suitable nesting habitat present

PHOTO: Courtesy © 2007 Ron Wolf

The short-eared owl nests and roosts (unless snow prevents this) on the ground. Its preferred habitats include open prairies, coastal grasslands, tundra, marshes, bogs, savanna, and dunes. Short-eared owls are uncommon breeders in the Klamath Basin, Modoc Plateau and Great Basin regions of northern California (Roberson 2008, Small 1994). Its daytime counterpart is the Northern harrier, and like the harrier, it can be seen flying low in its open habitat. The short-eared owl has a distinctively moth-like flight (Johnsgard 1990).

Long-eared owl *(Asio otus)*
Status: California Species of Special Concern (nesting)
Potential to Occur: High. Known to occur locally in isolated tree stands at HJWA

PHOTO: Courtesy © 2007 Ron Wolf

Long-eared owls inhabit open woodlands, forest edges, riparian strips along rivers, hedgerows, juniper thickets, woodlots, and wooded ravines and gullies. Breeding habitat includes thickly wooded areas for nesting and roosting with nearby open spaces for hunting. Long-eared owls nest almost exclusively in old stick nests of crows, magpies, ravens, hawks, or herons. Less often, they nest in rock crevices, tree cavities, or on open ground. Nests are usually located in wooded sites, often screened by shrubbery, vines, or branches and are commonly 5 to 10 meters (16 to 33 feet) above ground. Long-eared owls are considered uncommon local residents in northeastern California (Hunting 2008, Small 1994).

Burrowing owl *(Athene cunicularia)*
Status: Federal Bird of Conservation Concern, BLM Sensitive; California Species of Special Concern
Potential to Occur: Moderate. Suitable nesting habitat present

PHOTO: Alan and Elaine Wilson, Free Cultural Work

The burrowing owl is a year-long resident of open, dry grassland and desert habitats. They are also found as residents in grass, forb and open shrub stages of pinyon-juniper, and ponderosa pine habitats. This small owl is found the length of the state of California in appropriate habitats and has been found as high as 5,300 feet in Lassen County (Gervais et al. 2008, Grinnell and Miller 1944). Burrowing owls require burrows for nesting and roosting, and relatively short vegetation or sparse shrubs. Although they may dig their own burrows in soft soils, burrowing owls usually nest in old burrows of a ground squirrel, badger or other small mammals (Gervais et al. 2008).

Willow flycatcher *(Empidonax traillii)*
Status: Forest Service Sensitive; California Endangered (nesting)
Potential to Occur: Moderate. May occur as seasonal migrant, marginal nesting habitat available

PHOTO: © Steve Zack

Willow flycatchers historically nested throughout California, preferring riparian deciduous shrubs, particularly willow thickets (Grinnell and Miller 1944). Currently, three subspecies of the willow flycatcher breed in California. Each has been listed as state Endangered and USFS Region 5 Sensitive in California. Willow flycatchers are known to nest in the northeastern California and in montane riparian habitats in the Cascade-Sierra Range (Sedgwick 2000).

Loggerhead shrike *(Lanius ludovicianus)*
Status: Federal Bird of Conservation Concern; California Species of Special Concern
Potential to Occur: Observed

PHOTO: David Menke, USFWS

The loggerhead shrike is the only one of the world's 30 species of true shrikes that occurs exclusively in North America. Like other shrikes, it inhabits ecotones, grasslands, and other open habitats and feeds on a variety of invertebrate and vertebrate prey. Compared to most birds, its head is large in proportion to its body size—hence the name Loggerhead, which also means blockhead (Yosef 1996). The loggerhead shrike is known for its habit of impaling prey on thorns or barbed wire (a common nickname is "butcher bird"). Similar in coloration to mockingbirds, loggerhead

shrikes have a large head with a distinctive black mask and hooked beak. Males and females are similar in size. Loggerhead shrikes appear to be increasing in northeastern California, especially the Honey Lake Valley, but are uncommon elsewhere in the Great Basin region of California (Humple 2008).

Bank swallow *(Riparia riparia)*
Status: California Threatened (nesting)
Potential to Occur: Observed. Known to occur north of HJWA, suitable habitat along Long Valley Creek

PHOTO: © Scott Elowitz

The bank swallow is the smallest North American swallow, with a body length of about 4.75 inches. Bank swallows are distinguished from other swallows by their distinct brown breast band contrasting with white underparts. The upper parts are brown. The species nests in colonies and creates nests by burrowing into vertical banks consisting of fine-texture soils. Bank swallows breed in California from April to August and spend the winter months in South America. Currently, bank swallows are locally common only in restricted portions of California where sandy, vertical bluffs or riverbanks are available for the birds to dig their burrows and nest in colonies. Most of California's remaining populations nest along the upper Sacramento River where it still meanders in a somewhat natural manner; however, bank swallow nesting sites have been documented along the northern portion of Long Valley Creek and other isolated sites in northeastern California. It is estimated that the range of bank swallows in California has been reduced by 50% since 1900 (CDFG 2000).

California yellow warbler *(Dendroica petechia brewsteri)*
Status: Federal Bird of Conservation Concern; California Species of Special Concern (nesting)
Potential to Occur: High. Suitable nesting habitat present

PHOTO: Courtesy © 2007 Ron Wolf

Yellow warblers are neotropical migrants that breed in North America and winter from Mexico to northern South America (Heath 2008). Yellow warblers nest in a variety of shrubs associated with wetland habitats (Lowther et al. 1999). Dense growth may be preferred in order to reduce nest predation and brood parasitism. The males are sometimes polygamous. The female builds a neat, compact cup nest in an upright twig fork 2 to 12 feet up, sometimes up to 40 or even 60 feet. The cup is made of wool, plant down, dry weed stem fibers, and fine grass stems, and then lined with plant fibers, cotton, plant down, and sometimes feathers. Incubation of the 3 to 6 (usually 4 or 5) whitish spotted eggs lasts 11 days. Both parents tend the nestlings until fledging occurs at 9 to 12 days (ibid.).

Yellow-headed blackbird *(Xanthocephalus xanthocephalus)*
Status: California Species of Special Concern
Potential to Occur: Observed. Individuals observed along Long Valley Creek

PHOTO: Courtesy © 2009 Ron Wolf

Primarily wintering in northern and western Mexico, yellow-headed blackbirds occur in California as seasonal migrants and summer residents (Jaramillo 2008). Depending upon the location, their breeding season extends from mid-April to late July. Yellow headed blackbirds have a patchy distribution in California, but are locally numerous in northeastern California, occuring from the Klammath Basin to Sierra County and south along the east side of the Sierra to Owens Valley. This colonial species breeds almost exclusively in marshes with tall emergent vegetation such as tules (*Scirpus* spp.) or cattails (*Typha* spp.), where there is relatively deep water (ibid.); however, they have been documented nesting in low vegetation such as spikerush (*Eleocharis*) in Sierra Valley. Because of their need to build their nests over deeper water, yellow-headed blackbird breeding sites are often at the edges of large ponds, lakes and reservoirs (ibid.).

Mammals

Spotted bat *(Euderma maculatum)*
Status: BLM Sensitive; California Species of Special Concern; Western Bat Working Group High Priority
Potential to Occur: Moderate. Suitable habitat present nearby

PHOTO: © Merlin D. Tuttle, Bat Conservational International

Spotted bats are rare, year-round residents in California and Nevada. They are found in a wide variety of habitats, from low desert to high elevation coniferous forest, but are primarily associated with cliff-roosting habitat (Brown and Pierson 1996). Spotted bats emerge late in the evening and feed almost entirely on moths. This species appears to be relatively solitary, but sometimes hibernates in small clusters.

Long-legged myotis *(Myotis volans)*
Status: Western Bat Working Group High Priority
Potential to Occur: Moderate. Suitable habitat present nearby

PHOTO: © Merlin D. Tuttle, Bat Conservational International

The long-legged myotis is one of western America's most widely distributed bat species. It is found from the Tongas National Forest in Alaska, south through the western United States into the Baja peninsula, and along the Sierra Madre Occidental in Mexico. Long-legged myotis are especially dependent on wooded habitats from pinyon-juniper to coniferous forests, usually at elevations of 4,000 to 9,000 feet. Radio-tracking studies have identified maternity roosts beneath bark and in other cavities. These typically are located in openings or along forest edges where they receive a large amount of daily sun. Though maternity colonies are most often formed in tree cavities or under loose bark, they also are found in rock crevices, cliffs and buildings. Long-legged myotis forage over ponds, streams, water tanks, and in forest clearings, often on moths. Few winter records exist in the West (Bat Conservation International 2008).

Fringed myotis *(Myotis thysanodes)*
Status: BLM Sensitive; Western Bat Working Group High Priority
Potential to Occur: Moderate. Suitable habitat present nearby

PHOTO: © Merlin D. Tuttle, Bat Conservational International

Fringed myotis are found throughout much of California, and from southern to central Nevada. They frequent a variety of habitats from low desert scrub to high elevation coniferous forest (Brown and Pierson 1996). Known to be a cave-roosting species, this bat also uses rock crevasses, mines, trees, and buildings for day and night roosts. In northern California, both male and female fringed bats use tree snags exclusively for day roosts (Keinath 2004). These bats are fairly tolerant of cold and hibernation occurs from October to March. Short migratory movements to hibernating sites may occur. Mating occurs in the fall and large maternity colonies of up to 200 individuals form from late April to September. One young is born from May to July, mostly in late June, and lactating females can be found through August (ibid.).

Pallid bat *(Antrozous pallidus)*
Status: Forest Service Sensitive, BLM Sensitive; California Species of Special Concern; Western Bat Working Group High Priority
Potential to Occur: High. Suitable habitat present on site

PHOTO: © Merlin D. Tuttle, Bat Conservation International

Pallid bats occur throughout California, except in the high Sierra Nevada, from Shasta to Kern counties, and in the northwestern corner of the state from Del Norte and western Siskiyou counties (Hall 1981, Zeiner et al. 1990b). These bats inhabit a variety of habitats, including grasslands, shrublands, woodlands, and forests from sea level up through mixed coniferous forests. They are common in grasslands and desert regions in the southwestern United States and most abundant in the Sonoran life zones; they are less abundant in evergreen and mixed forests than in vegetation assemblages characteristic of lower elevations (Hermanson and O'Shea 1983). Pallid bats reside yearly in the majority of their range and they have been collected at sites up to 8,000 feet in elevation. Pallid bats may roost in a variety of places including tree cavities, rock crevices and human-made structures (Brown and Pierson 1996).

Western white-tailed jackrabbit *(Lepus townsendii townsendii)*
Status: California Species of Special Concern
Potential to Occur: Moderate. Suitable habitat present and within range

PHOTO: Vic Hall, USFWS

The range of white-tailed hares in California is restricted to the east side of the Sierra Nevada and Cascade ranges from Tulare County north to the Oregon border. Usually solitary and nocturnal, it is the largest of California's hares and the second largest in the Western Hemisphere. In winter, it is sometimes mistaken for a snowshoe hare because in the colder parts of its range, individuals turn completely white (Zeiner et al. 1990b).

Pygmy rabbit *(Brachylagus idahoensis)*
Status: BLM Sensitive; California Species of Special Concern
Potential to Occur: Low. Suitable habitat present but limited range

PHOTO: Aaron Ambos, Nevada Natural Heritage Program

Pygmy rabbits have a limited geographic range that includes northeastern California, eastern Oregon, southwestern Washington, southern Idaho, and portions of Nevada (Hall 1946, Hall 1981). They are the smallest rabbit species in North America: reported mean weights for adults range from 398 to 462 g (0.88-1.02 lb) (Washington Department of Fish and Wildlife 1995). Considered sagebrush obligates, pygmy rabbits are found in areas where big sagebrush grows in very dense stands (Ulmschneider et al. 2004). Unlike other species of rabbits native to North America, this species usually digs its own burrows (Flinders 1999). Burrow systems usually consist of two to seven openings, with the main entrance concealed at the base of a sagebrush plant (Ulmschneider et al. 2004). Pygmy rabbits have been documented in the Honey Lake basin (R. Cull, unpublished field data) but to date, no surveys have been conducted in Long Valley.

Ringtail *(Bassariscus astustus)*
Status: California Fully Protected
Potential to Occur: Moderate. Suitable habitat present along Balls Creek

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The ringtail range extends as far north as southwest Oregon, throughout California except the agricultural portion of the Central Valley, east to Colorado, and south into Central America (Jameson and Peeters 2004). They are found in a variety of habitats including dense riparian growth, montane evergreen forests, oak woodlands, pinyon juniper, chaparral, and deserts (Kaufmann 1982). Their territory is usually no farther than one-half mile away from a permanent water source; they find reproductive and resting cover in hollow trees, logs, snags, rocks, and abandoned burrows. Nocturnal and secretive, ringtails feed on a variety of small mammals, lizards, invertebrates, and birds (Zeiner et al. 1990b).

American badger *(Taxidea taxus)*
Status: California Species of Special Concern
Potential to Occur: Observed. Reported on site


PHOTO: © Martin J. Gilroy, SEI

American badgers are generally associated with dry, open, treeless regions, prairies, parklands, and cold desert areas (Zeiner et al. 1990b). They range throughout the western United States, north into the western provinces of Canada, and east to Ohio, Michigan, and Ontario, Canada (Long 1972). Badgers are carnivores that feed on ground squirrels (*Spermophilus* ssp.), cottontail rabbits (*Sylvilagus* spp.), jackrabbits (*Lepus* spp.), small rodents (*Peromyscus, Microtus, Mus, Reithrodontomys, Dipodomys*), pocket gophers (*Thomomys* spp.), snakes, birds, and insects (Errington 1937, Messick and Hornocker 1981). Badgers are fossorial animals (burrowing), badgers typically capture prey by digging them out of their burrows. They may also scavenge prey killed by other predators or prey on species that co-use their dens, such as cottontail rabbits (Snead and Hendrickson 1942). Adult badgers are primarily nocturnal (Lindzey 1982, Sargeant and Warner 1972), but juveniles are active during the day, especially during dispersal in June-August (Messick and Hornocker 1981).

Desert bighorn sheep *(Ovis canadensis nelsoni)*
Status: Forest Service Sensitive, BLM Sensitive
Potential to Occur: Observed. Nearest known populations are in Nevada.


PHOTO: Andrea Barna, Creative Commons

The desert bighorn are one of three subspecies of bighorn sheep found in California. The desert bighorn ranges through the dry, desertmountains of eastern California, much of Nevada, northwestern Arizona, and southern Utah. Bighorn sheep are gregarious, sometimes forming herds of over 100 individuals, but small groups of 8-10 are more common. Mature males usually stay apart from females and young for most of the year in separate bachelor herds. They migrate seasonally, using larger upland areas in the summer and concentrating in sheltered valleys during the winter (De Lisle 2006).